Basic Course Information

Semester	**Fall 2014**	Instructor Name	**Dr. Daniel Gilison**
Course Title & #	**General Biology: Molecules, Cells, and Genetics – BIOL 180**	Email	**daniel.gilison@imperial.edu**
CRN #	**10318**	Webpage	**http://imperial.blackboard.com**
Room	**2722 (lecture), 2711 (lab)**	Office	**Room 2770**
Class Dates	**8/18/14 – 12/11/14**	Office Hours	**Monday 12-1 PM, Tuesday, 1:30-2:30 PM, Wednesday 12-1 PM, Thursday 1:30-2:30 PM**
Class Days	**MWR**	Office Phone #	**(760) 355-5759**
Class Times	**10:15-11:40 AM (MW lecture) 8:35-11:45 AM (R lab)**	Office contact if student will be out or emergency	**(760) 355-5759 or daniel.gilison@imperial.edu**
Units	**4**		

Course Description

This is one of two entry-level courses designed for life science majors, health care, and science educators intending to transfer to four-year institutions. However, the course is open to all students. This course will introduce students to molecules of cells, cell structures and functions, cell division, cellular respiration, photosynthesis, molecular biology, and genetics. (CSU, UC)

Student Learning Outcomes

Upon course completion, the successful student will have acquired new skills, knowledge, and or attitudes as demonstrated by being able to:

1. write lab reports that demonstrate an understanding of the lab and the ability to draw conclusions based on data. (ILO1, ILO2)
2. discuss primary research literature and understand how science is performed and described. (ILO4)
3. demonstrate the ability to think like a scientist by coming up with a valid experimental design. (ILO2)
4. demonstrate critical-thinking skills on exam essay questions. (ILO2)

Course Objectives

Upon satisfactory completion of the course, students will be able to:

1. Understand the basic concepts of biology and explain and use the scientific method.
2. Describe the structure of atoms, and understand why chemical bonds form.
3. Explain the important properties of water molecules and carbon atoms for life.
4. Describe the different macromolecules in living organisms, and give examples of each type.
5. Understand the functions of cell organelles.
6. Explain the functions of the cell membrane.
7. Describe metabolism, and understand how enzymes assist in chemical reactions.
8. Explain the processes of cellular respiration and photosynthesis.
9. Understand the processes of cell communication.
10. Describe the processes of mitosis and meiosis, and how they are regulated.
11. Explain Mendelian inheritance, give examples of inheritance patterns, and work problems dealing with basic Mendelian genetics.
12. Describe chromosome structure and function, including DNA replication and repair, and give examples of genetic diseases at the chromosomal level.
13. Understand the processes of transcription and translation, and how DNA mutations cause changes in protein sequences.
14. Discuss modern DNA technologies, and their importance in life.

Textbooks & Other Resources or Links

- Reece, J.B., Urry, L.A., Cain, M.L., Wasserman, S.A., Minorsky, P.V., Jackson, R.B. (2014). *Campbell Biology, Custom Edition* (10th/e). San Francisco Pearson/Benjamin Cummings. ISBN: 1269700758
    - **CLASS WILL BE USING A CUSTOM EDITION OF THE ABOVE TEXTBOOK**
- Morgan, Judith G., and Carter, M. Eloise Brown (2014). *Investigating Biology Lab Manual* (8th/e). San Francisco Pearson/Benjamin Cummings. ISBN: 126970074X
    - **CLASS WILL BE USING A CUSTOM EDITION OF THE ABOVE LAB MANUAL**
- BioRad Lab Manual (provided in class)

Course Requirements and Instructional Methods

1. There will be **4** written exams, worth **120 points** each (**480 points** total). Exams will begin at the start of class, and will consist of 50 multiple choice/matching questions, and 5 short-answer questions. Figures from the lectures and textbook will appear on the exams. Scantron sheets will be provided, but make sure you bring good-quality #2 pencils with working erasers. If you are late to the exam, you will not be given extra time to finish it. There will be no make-up exams, except for extreme circumstances. If you have a valid, documented reason for missing an exam, it is **your responsibility** to tell me about it and provide valid documentation by the **next class meeting**, otherwise you will not have the opportunity to make up the exam, and will be given a **zero** for that exam.
2. There will be **1** comprehensive final exam worth **150 points**. It will consist of 75 multiple choice/matching questions, and will cover all of the lecture material covered in the course. There are no make-ups for this exam.
3. There will be **1** lab exam, worth **110 points**. This lab exam will test your ability to think like a scientist by using lab techniques and the scientific method covered in the class to answer a scientific question. This lab exam will be open book/notes/papers. There are no make-ups for this exam.
4. We will be reading and discussing scientific papers during some of the labs. Reading the papers and discussing them are part of your grade. There are **4** paper discussion sessions worth **20 points** each (**80 points** total). **5 points** from each discussion will be an "open paper" 5 minute quiz about the paper **on Blackboard**. The other **15 points** will be for the group discussion.
5. There will be **10** lab worksheets worth **10 points** each (**100 points** total). Lab worksheets are due at the end of the lab. Lab worksheets cannot be made up, except for extreme circumstances.
6. There will be **6** lab reports worth **30 points** each (**180 points** total). Lab reports are due at the start of lab one week after the completion of the lab. Lab reports will be due for the following labs – Diffusion & Osmosis, Enzymes, Cell Respiration, DNA Fingerprinting, pGLO, and PV92.
7. There will be extra credit available during the review sessions and exams.

Out of Class Assignments: The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement.

Course Grading Based on Course Objectives

4 exams	=	480 points
1 comprehensive final	=	150 points
1 lab exam	=	110 points
4 Paper discussions	=	80 points
10 Lab worksheets	=	100 points
6 Lab reports	=	180 points
Total	**=**	**1100 points**

A	990 – 1100 points
B	880 – 989 points
C	770 – 879 points
D	660 – 769 points
F	0 – 659 points

Attendance

- A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student's status will be the same as that of any other student who desires to add a class. It is the student's responsibility to drop or officially withdraw from the class. See General Catalog for details.
- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped. For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as 'excused' absences.

Classroom Etiquette

1. No food or drinks in the lab. Only bottled water allowed in the classroom.

2. **Cell phones must be turned off at all times!** Ringing cell phones are a distraction both to me and to other students in the class. If you must use your cell phone during class, please take it outside, and then come back in when you are done. You should not be checking your phone, or texting, during lectures. If you are caught checking your phone, or texting, during class, you may be asked to leave for the day.
3. **No talking during class!** Talking is a distraction to me and other students in the class. If you have questions during the lecture, please ask me! If you are caught talking, you may be asked to leave for the day.
4. Lab groups cannot leave the lab until **all** members of the group have finished the experiments. Lab groups will have to show me the data from the lab, and may be asked to explain the data before the lab group is allowed to leave the lab. Lab groups **must** thoroughly clean up after themselves, or else groups will be assigned to do clean up at the end of the lab!
5. When doing labs, make sure that you observe the results from all parts of the experiments. You may be asked about your results before you can leave the lab, so make sure you have seen the results, or else you may have to repeat that experiment!
6. The deadline for dropping a course without appearing on transcript is **Monday, September 1**.
7. The deadline for dropping a full-term class is **Saturday, November 8**.

Academic Honesty

- Plagiarism is taking and presenting as one's own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not understand how to 'cite a source' correctly, you must ask for help.
- Cheating is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question.

  Anyone caught cheating or plagiarizing will receive a zero (0) on the exam or assignment, and the instructor may report the incident to the Campus Disciplinary Officer, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the General School Catalog for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to, the following: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment; (c) communicating test information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment; (e) using a commercial term paper service.

  Students may work together for lab worksheets and lab reports, but each student must turn in **their own work in their own words**. If students turn in assignments with the same or similar wording (i.e., from copying off another student), they will all be given a **zero** for that assignment.

Additional Help

1. Make sure you come on time to all lectures and labs! Arriving late or missing a class for any reason (excused or unexcused) can cause you to miss lab and lecture material, and will only put you at a disadvantage in this class.
2. Make sure you know what will be happening each day for class! Keep the class schedule handy.
3. Skim through or read the chapter before coming to lecture. You will have a general feel for the subject matter, which will help your understanding of the material during lecture. Look through the figures for the chapter, and try to understand them.
4. Read through the lab activity before coming to lab. It will make you more prepared to do the lab activity, and you can perform it better, quicker, and will be able to easily understand what is happening in the lab.
5. Pay attention during lectures! I will say things during lecture that are not written on the PowerPoint slides or the board that will be on the exams. Make sure you take good notes during class. Don't just mindlessly write down word-for-word what is on the slides. Listen to what I have to say, and take notes on that also!
6. Study, study, study! You should spend at least 6 hours studying for this class each week. You should study in an area where there are no distractions (television, radio, computers, iPods, other people, etc.). However, you should also spend time studying in groups. Nothing makes you learn the material better than having to explain it to someone else!
7. Don't cram! It's better to spend some time each week studying as compared to saving it all until the night before the exam.

If you need any technical assistance with Blackboard, please visit the IVC Blackboard Support website at:
http://www.imperial.edu/students/blackboard-support/

Disabled Student Programs and Services (DSPS)

Any student with a documented disability who may need educational accommodations should notify the instructor or the Disabled Student Programs and Services (DSP&S) office as soon as possible. The DSP&S office is located in Building 2100, telephone 760-355-6313, if you feel you need to be evaluated for educational accommodations.

Student Counseling and Health Services

Students have counseling and health services available, provided by the pre-paid Student Health Fee. We now also have a fulltime mental health counselor. For information see http://www.imperial.edu/students/student-health-center/. The IVC Student Health Center is located in the Health Science building in Room 2109, telephone 760-355-6310.

Student Rights and Responsibilities

Students have the right to experience a positive learning environment and due process. For further information regarding student rights and responsibilities, please refer to the IVC General Catalog available online at http://www.imperial.edu/index.php?option=com_docman&task=doc_download&gid=4516&Itemid=762

Information Literacy

Imperial Valley College is dedicated to helping students skillfully discover, evaluate, and use information from all sources. Students can access tutorials at http://www.imperial.edu/courses-and-programs/divisions/arts-and-letters/library-department/info-lit-tutorials/

Anticipated Class Schedule / Calendar

Tentative Class Schedule (Mon/Wed 10:15 – 11:40 AM lecture, Thurs 8:35 –11:45 AM lab)

Week	Lecture (Mondays)	Lecture (Wednesdays)	Lab (Thursdays)
Aug 18-21	Introduction to the class	Ch. 1 – Themes in the Study of Life	Introduction to the lab / Ch. 1 – Themes in the Study of Life
Aug 25-28	Ch. 2 – Chemical Context of Life	Ch. 2 – Chemical Context of Life	Ch. 3 – Water / Ch. 4 – Carbon
Sept 1-4	**NO CLASS – Labor Day**	Ch. 5 – Large Biological Molecules	Paper discussion / Pipets lab
Sept 8-11	Ch. 5 – Large Biological Molecules	Review for Exam 1	Got Protein? lab
Sept 15-18	**Exam 1 – Ch. 1 – 5**	Ch. 6 – Tour of the Cell	Ch. 6 – Tour of the Cell / Microscope and Cells lab
Sept 22-25	Ch. 7 –Membrane Structure and Function	Ch. 8 – Metabolism	Ch. 9 – Cellular Respiration / Osmosis lab
Sept 29 – Oct 2	Ch. 9 – Cellular Respiration	Ch. 10 – Photosynthesis	Paper discussion / Enzymes lab / **Osmosis Lab Report**
Oct 6-9	Ch. 10 – Photosynthesis	Ch. 11 – Cell Communication	Review for Exam 2 / Cellular Respiration lab / **Enzymes Lab Report**
Oct 13-16	**Exam 2 – Ch. 6 – 10**	Ch. 12 – Cell Cycle	Ch. 13 – Meiosis / Mitosis lab / **Cellular Respiration Lab Report**
Oct 20-23	Ch. 16 – Molecular Basis of Inheritance	Ch. 17 – Gene to Protein	DNA Fingerprint I lab (Ch. 20 – Restriction enzymes & Gel electrophoresis) / Paper discussion
Oct 27-30	Review for Exam 3	Ch. 17 – Gene to Protein	pGLO I lab (Ch. 20 – Bacterial transformation) / DNA Fingerprint II lab
Nov 3-6	**Exam 3 – Ch. 11-13, 16**	Ch. 14 – Mendel and the Gene Idea	PV92 I lab (Ch. 20 – PCR) / pGLO II lab / **DNA Fingerprint Lab Report**
Nov 10-13	Ch. 14 – Mendel and the Gene Idea	Ch. 15 – Chromosomal Basis of Inheritance	PV92 II lab / **pGLO Lab Report**
Nov 17-20	Ch. 15 – Chromosomal Basis of Inheritance	Ch. 20 & 21 – Biotechnology & Genomes	PV92 III lab / Paper discussion
Nov 24-27	**NO CLASS – Thanksgiving Week**	**NO CLASS – Thanksgiving Week**	**NO LAB – Thanksgiving Week**
Dec 1-4	Exam 4 review	**Exam 4 – Ch. 17, 14, 15, 20, 21**	Lab exam review / **PV92 Lab Report**
Dec 8-11	Final exam review	**Comprehensive Final (all chapters)**	**Lab Exam**